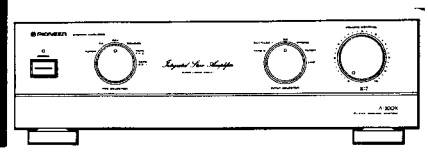
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2563

STEREO AMPLIFIER

A-300X

A-300X HAS THE FOLLOWING :

Type	Power Requirement	Remarks
HB	AC 220 V, 240 V (switchable)*	

* Change the connection of the power transformer's primary wiring.

- **This manual is applicable to A-300X/HB.**

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FG JUNE 1992 Printed in

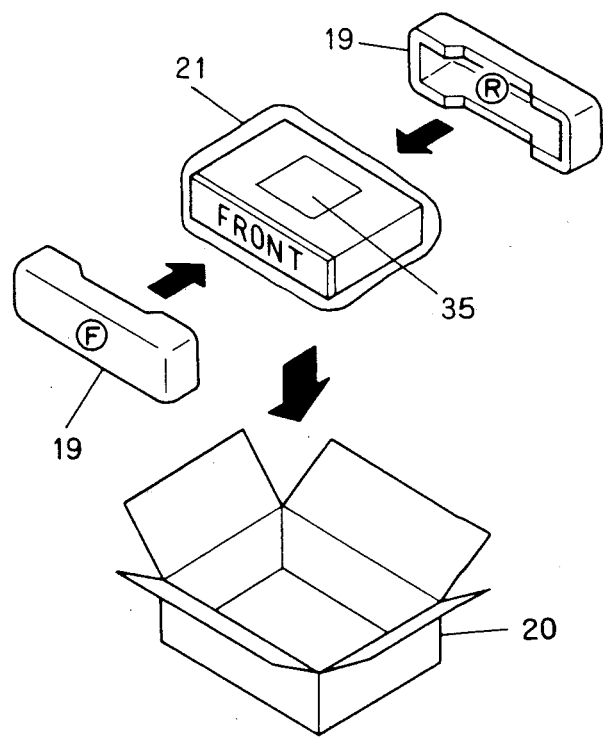
1. EXPLODED VIEWS, PACKING AND PARTS LIST

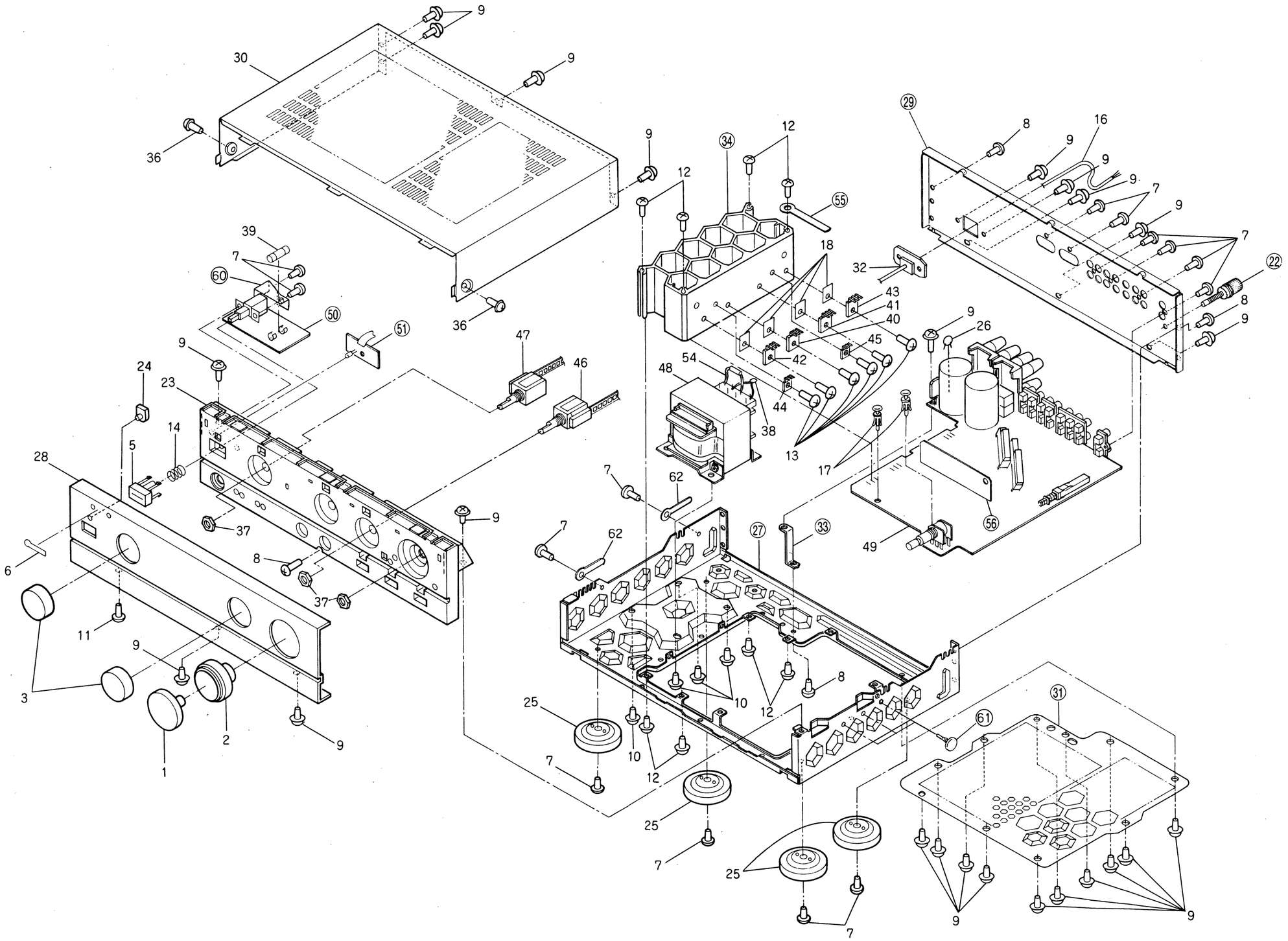
NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Mark	No.	Description	Parts No.
	1	ROTARY KNOB L (PLS)	AAB1160
	2	ROTARY KNOB R (PLS)	AAB1162
	3	ROTARY KNOB M (PLS)	AAB1231
	4	.....	
	5	KNOB (POWER)	AAD1535
	6	NAME PLATE (METAL)	AAM1029
	7	SCREW	ABA−298
	8	SCREW (STEEL)	ABA1009
	9	SCREW (STEEL)	ABA1011
	10	SCREW (STEEL)	ABA1016
	11	SCREW (STEEL)	ABA1048
	12	SCREW (STEEL)	ABA1050
	13	SCREW	ABA1082
	14	SPRING	ABH−052
	15	.....	
⚠	16	AC POWER CORD	ADG1070
	17	RIVET	AEC−441
	18	SHEET	AEE1014
	19	STYROL PROTECTOR	AHA1335
	20	PACKING CASE	AHD2350
	21	COVER SHEET	AHG1016
NSP	22	TERMINAL SCREW	AKE−031
	23	PANEL BASE	AMB1651
	24	INDICATING LENS	AMR1160
	25	INSULATOR ASS'Y	AMR2140
	26	C2 CAPACITOR	ACG1005
NSP	27	CHASSIS	ANA1121
	28	FRONT PANEL	ANB1532
NSP	29	REAR PANEL	ANC1550
	30	METAL BONNET	AZN1799
NSP	31	BOTTOM PLATE	ANF1031
	32	AC CORD SPACER	ANG1153
NSP	33	PCB HOLDER	ANG1442
NSP	34	HEAT SINK	ANH1260
	35	OPERATING INSTRUCTIONS (ENGLISH)	ARB1391
	36	SCREW	BBT30P060FZK
	37	NUTS	NK90FZB
	38	C1 CAPACITOR	ACG1005
⚠	39	FU1 FUSE (T1.6A)	AEK−510
⚠	40	Q1 TRANSISTOR	2SC3181N
⚠	41	Q2 TRANSISTOR	2SC3181N
⚠	42	Q3 TRANSISTOR	2SA1264N
⚠	43	Q4 TRANSISTOR	2SA1264N
⚠	44	Q5 TRANSISTOR	2SC4137
⚠	45	Q6 TRANSISTOR	2SC4137

Mark	No.	Description	Parts No.
	46	S1 SWITCH	ASU1035
	47	S2 SWITCH	ASU1037
⚠	48	T1 POWER TRANSFORMER	ATS1278
◉	49	AF COMPLEX ASS'Y	AWZ4522
NSP	50	POWER SW ASS'Y	AWZ2856
NSP	51	LED ASS'Y	AWZ4524
	52	.....	
	53	.....	
⚠	54	R1 RESISTOR	RD1/4PMF010J
NSP	55	BINDER	AEF1004
NSP	56	SHIELD ASS'Y	AWZ2860
	57	.....	
	58	.....	
	59	.....	
NSP	60	BARRIER	AEC1443
NSP	61	SPACER	AEC1256
	62	BINDER	AEP−215





2. F

NOTES:
- *Parts*
- *The Δ*
  be su
- *Parts*
- *When*
  Ex.1

Ex.2

Mark

LIST

◉ AF
NSP PO
NSP LE
NSP SH

POW

CAPA
⚠ C5

SWITC
⚠ S5

LED

SEMIC
D6

AF C

SEMIC
IC1
Q2
Q2
Q2
Q2

Q2
Q2
Q2
Q2
Q2

Q2
Q2
Q2
Q2
Q2

Q3
Q3
Q3
Q3
Q3

2. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω → 56×10¹ → 561 ..... RD1/8PM[5][6][1]J
47kΩ → 47×10³ → 473 ..... RD1/4PS[4][7][3]J
0.5Ω → 0R5 ..... RN2H[0][R][5]K
1Ω → 010 ..... RS1P[0][1][0]K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62kΩ→ 562×10¹ →5621 ..... RN1/4PC[5][6][2][1]F

(22)

Mark	No.	Description	Parts No.

LIST OF ASSEMBLIES

◉	AF COMPLEX ASSY	AWZ4522
NSP	POWER SW ASSY	AWZ2856
NSP	LED ASSY	AWZ4524
NSP	SHIELD ASSY	AWZ2860

POWER SW ASS'Y

CAPACITORS

⚠	C510,C511 CKA (0.01/AC400V)	ACG1002

SWITCH

⚠	S501 PUSH SWITCH	ASG1035

LED ASS'Y

SEMICONDUCTOR

	D604 LED (RED)	AEL1065

AF COMPLEX ASS'Y

SEMICONDUCTORS

	IC101 IC	M5220P
	Q201,Q202 TRANSISTOR	2SA979
	Q203-Q208 TRANSISTOR	2SA1048
	Q211,Q212 TRANSISTOR	2SC1845
	Q215-Q218 TRANSISTOR	2SA1048
	Q219,Q220 TRANSISTOR	2SC2705
	Q221,Q222 TRANSISTOR	2SC3298
	Q223,Q224 TRANSISTOR	2SA1306
	Q225,Q226 TRANSISTOR	2SC2603
	Q227,Q228 TRANSISTOR	2SC1845
	Q229,Q230 TRANSISTOR	2SA992
	Q231,Q232 TRANSISTOR	2SA1145
	Q233,Q234 TRANSISTOR	2SA992
	Q237 TRANSISTOR	2SC1845
	Q238 TRANSISTOR	2SA992
	Q301,Q302 TRANSISTOR	2SC1845
	Q303,Q304 TRANSISTOR	2SC2458
	Q305 TRANSISTOR	2SA1048
	Q306 TRANSISTOR	2SC1815
	Q307 TRANSISTOR	2SC2458
	D201,D202 ZENER DIODE	RD2.7ESB1
	D209-D216 DIODE	HSS104-02
	D217-D220 ZENER DIODE	RD8.2ESB1
	D301-D306 DIODE	HSS104-02
	D307 ZENER DIODE	RD15ESB
	D503,D504 ZENER DIODE	RD16ESB3
	D505,D506 DIODE	11E2
	D507 DIODE	D5SB20F

COILS & FILTERS

	L401,L402 COIL	ATH1004

CAPACITORS

	C103,C104 CERAMIC CAPACITOR	CCCSL221J50
	C107,C108 ELECTR. CAPACITOR	CEXA101M25
	C109,C110 AUDIO FILM CAPACITOR	CFTXA683J50
	C111,C112 AUDIO FILM CAPACITOR	CFTXA183J50
	C113,C114 ELECTR. CAPACITOR	CEXA4R7M50
	C143,C144 MYLOR FILM CAPACITOR	CQMA472K50
	C117,C118 ELECTR. CAPACITOR	CEAS221M25
	C121,C122 MYLOR FILM CAPACITOR	CQMA122J50
	C123,C124 ELECTR. CAPACITOR	CEXA100M50
	C201,C202 ELECTR. CAPACITOR	CEEA2R2M50
	C203,C204 CERAMIC CAPACITOR	CCCSL101K500
	C205,C206 CERAMIC CAPACITOR	CCCSL101J50
	C207,C208 CERAMIC CAPACITOR	CCCSL470J50
	C209,C210 CERAMIC CAPACITOR	CCCSL101J50
	C211,C212 ELECTR. CAPACITOR	CEEA221M16
	C213-C216 CERAMIC CAPACITOR	CCCSL150K500
	C217,C218 ELECTR. CAPACITOR	CEAS101M10
	C219-C222 ELECTR. CAPACITOR	CEAS3R3M100
	C225,C226 ELECTR. CAPACITOR	CEAS331M10
	C227-C230 CERAMIC CAPACITOR	CCCSL330K500
	C231,C232 CERAMIC CAPACITOR	CKCYB122K50
	C233-C236 ELECTR. CAPACITOR	CEAS100M50
	C237,C238 ELECTR. CAPACITOR	CEAS101M50
	C251-C254 CERAMIC CAPACITOR	CCCSL330K500
	C255 CERAMIC CAPACITOR	CCCSL680J50
	C256 CERAMIC CAPACITOR	CCDSL470J50
	C301,C302 ELECTR. CAPACITOR	CEAS2R2M50
	C303 ELECTR. CAPACITOR	CEAS471M6
	C304 CERAMIC CAPACITOR	CKCYF103Z50
	C305 ELECTR. CAPACITOR	CEAS101M25
	C306 ELECTR.CAPACITOR	CEASR47M50
	C401-C404 AUDIO FILM CAPACITOR	CFTXA104J50
	C501,C502 ELECTR.CAPACITOR	CEAS221M25
	C505 ELECTR.CAPACITOR (6800/50V)	ACH1189
	C506 ELECTR.CAPACITOR (6800/50V)	ACH1190
	C508 ELECTR.CAPACITOR	CEHAQ101M50
	C509 ELECTR.CAPACITOR	CEHAQ220M50
	C725 CERAMIC CAPACITOR	CKCYF103Z50
	C731 CERAMIC CAPACITOR	CKCYF103Z50

RESISTORS

	VR201,VR202 SEMI-FIXED (47K)	ACP1045
	VR701 VARIABLE (100K−20AX2)	ACT1063
	R105,R106 CARBON FILM RESISTOR	RDR1/6PU100J
	R121,R122 CARBON FILM RESISTOR	RDR1/4PM820J
	R133,R134 CARBON FILM RESISTOR	RDR1/6PU471J
	R141,R142 CARBON FILM RESISTOR	RDR1/6PU563J
	R143,R144 CARBON FILM RESISTOR	RD1/4PM560J
	R201-R204 CARBON FILM RESISTOR	RDR1/4PM□□□J
	R205-R214 CARBON FILM RESISTOR	RD1/4PM□□□J
	R215-R218 CARBON FILM RESISTOR	RDR1/4PM□□□J
	R219-R234 CARBON FILM RESISTOR	RD1/4PM□□□J
	R237,R238 CARBON FILM RESISTOR	RDR1/4PM563J
⚠	R239-R242 FUSIBLE RESISTOR	RFA1/4PS101J
⚠	R243,R244 CARBON FILM RESISTOR	RD1/4PMF561J
⚠	R245-R248 FUSIBLE RESISTOR	RFA1/4PS101J
	R249-R252 CARBON FILM RESISTOR	RD1/4PM□□□J
⚠	R257-R260 FUSIBLE RESISTOR	RFA1/4PS101J
⚠	R261-R264 FUSIBLE RESISTOR	RFA1/4PS470J
⚠	R265-R268 FUSIBLE RESISTOR	RFA1/4PS4R7J
⚠	R269,R270 RESISTOR (0.33, 5W)	ACN1087
	R275-R278 CARBON FILM RESISTOR	RD1/4PM□□□J
⚠	R281-R284 FUSIBLE RESISTOR	RFA1/4PS331J
⚠	R285,R286 FUSIBLE RESISTOR	RFA1/4PS101J
⚠	R287,R288 CARBON FILM RESISTOR	RD1/4PMF4R7J
⚠	R289,R290 FUSIBLE RESISTOR	RFA1/4PS331J
	R299 CARBON FILM RESISTOR	RD1/4PM100J
	R301,R302 CARBON FILM RESISTOR	RD1/4PMF222J
	R308 CARBON FILM RESISTOR	RD1/4PMF101J
	R311-R315 CARBON FILM RESISTOR	RD1/4PM□□□J
	R326 CARBON FILM RESISTOR	RD1/4PM181J
	R330 CARBON FILM RESISTOR	RD1/4PMF010J
	R401,R402 CARBON FILM RESISTOR	RD1/4PMFL100J
	R407,R408 CARBON FILM RESISTOR	RD1/4PMFL100J
	R501-R506 CARBON FILM RESISTOR	RD1/2PM□□□J
	R508 CARBON FILM RESISTOR	RD1/4PMF010J
	R509,R510 METAL OXIDE RESISTOR	RS1LMF332J
	R517-R520 CARBON FILM RESISTOR	RD1/2PM471J
	R731,R732 CARBON FILM RESISTOR	RD1/4PM103J
	OTHER RESISTORS	RD1/8PM□□□J

SWITCHES

	S701 SWITCH	ASU1016
	S702 SWITCH	ASU1002

OTHERS

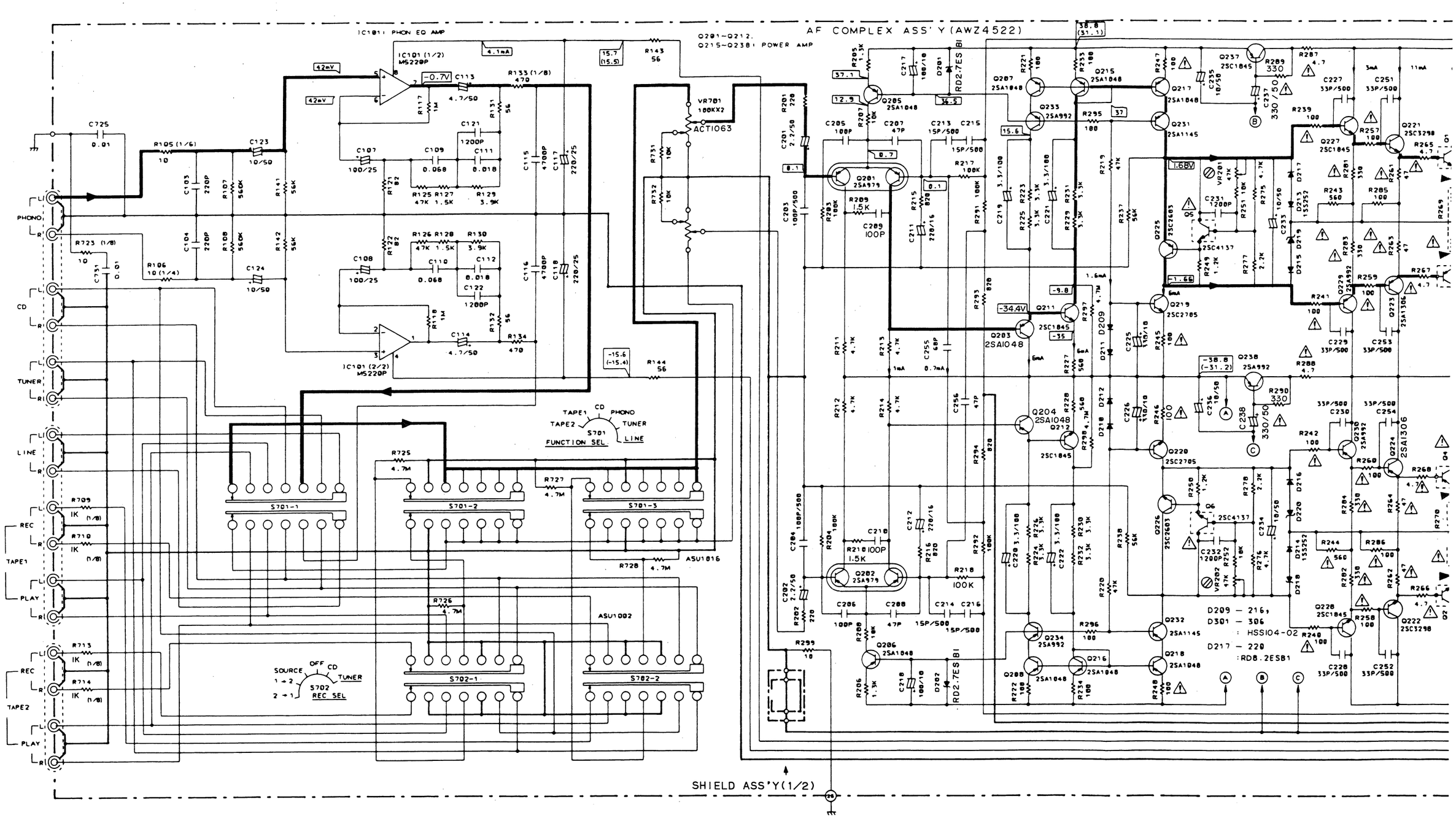
	RY301 RELAY	ASR-111
	PHONO JACK 4-P	AKB1007
	PHONO JACK 6-P	AKB1008
	PHONO JACK 2-P	AKB1059
	SPEAKER TERMINAL 4-P	AKE1020

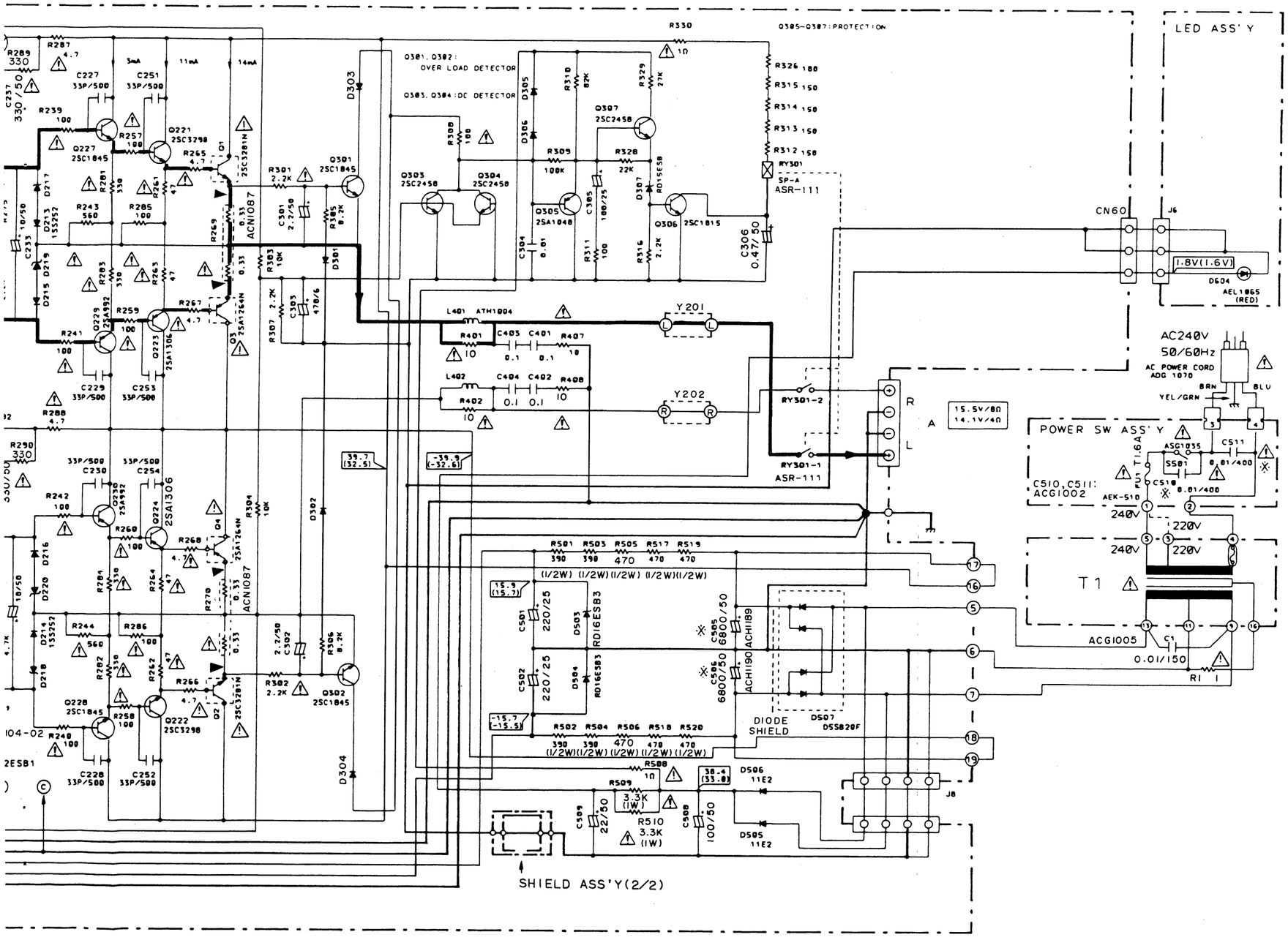
SHIELD ASS'Y

No parts supplied with the SHIELD Ass'y.

A B C D

3. SCHEMATIC DIAGRAMS

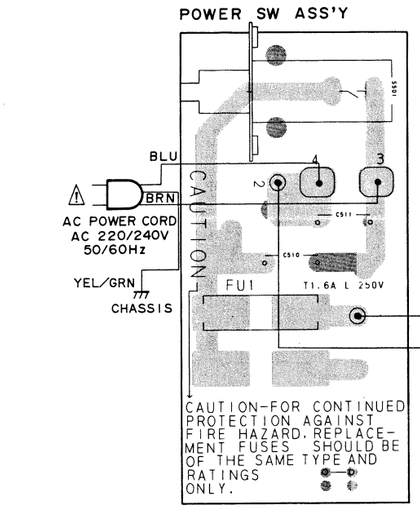


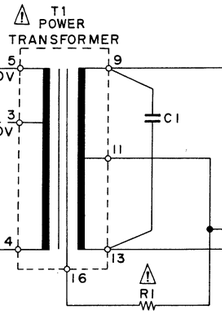


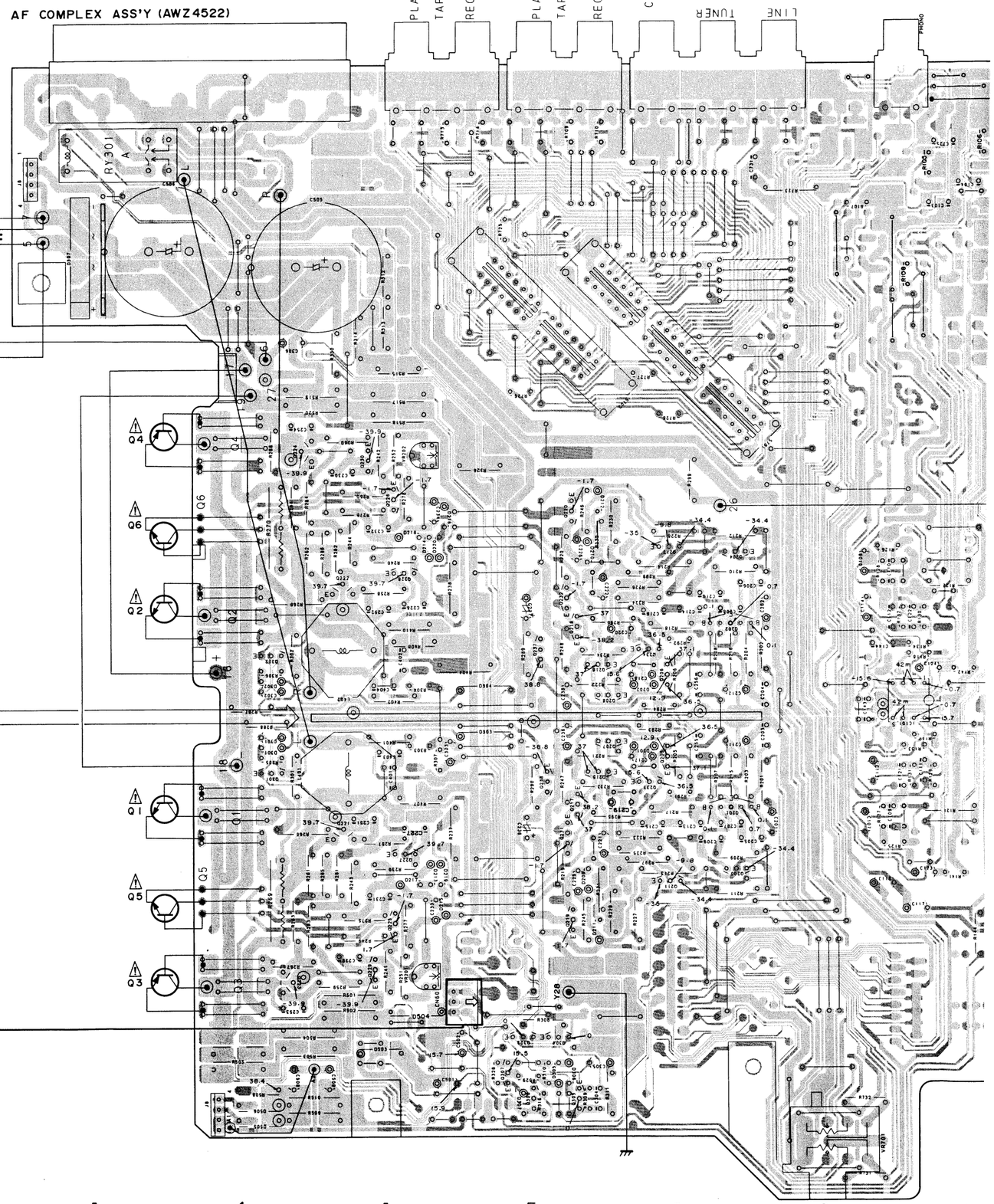
Note: (Type 1)

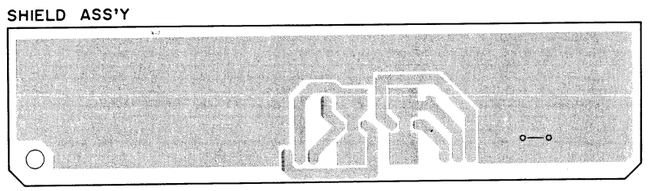
1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   V : Signal voltage at rated output.
   : DC voltage (V) at no input signal unless otherwise noted.
   Value in ( ) is DC voltage at rated power.
   ⇦ mA or ← mA : DC current at no input signal unless otherwise noted.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⊘ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):
   S501 : POWER SW (ON-OFF)
   S701 : FUNCTION SEL (TAPE 2 – TAPE 1 – CD – PHONO – TUNER – LINE)
   S702 : REC SEL (2➞1 – 1➞2 – SOURCE – OFF – CD – TUNER)

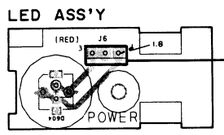
4. PCB CONNECTIONS DIAGRAMS



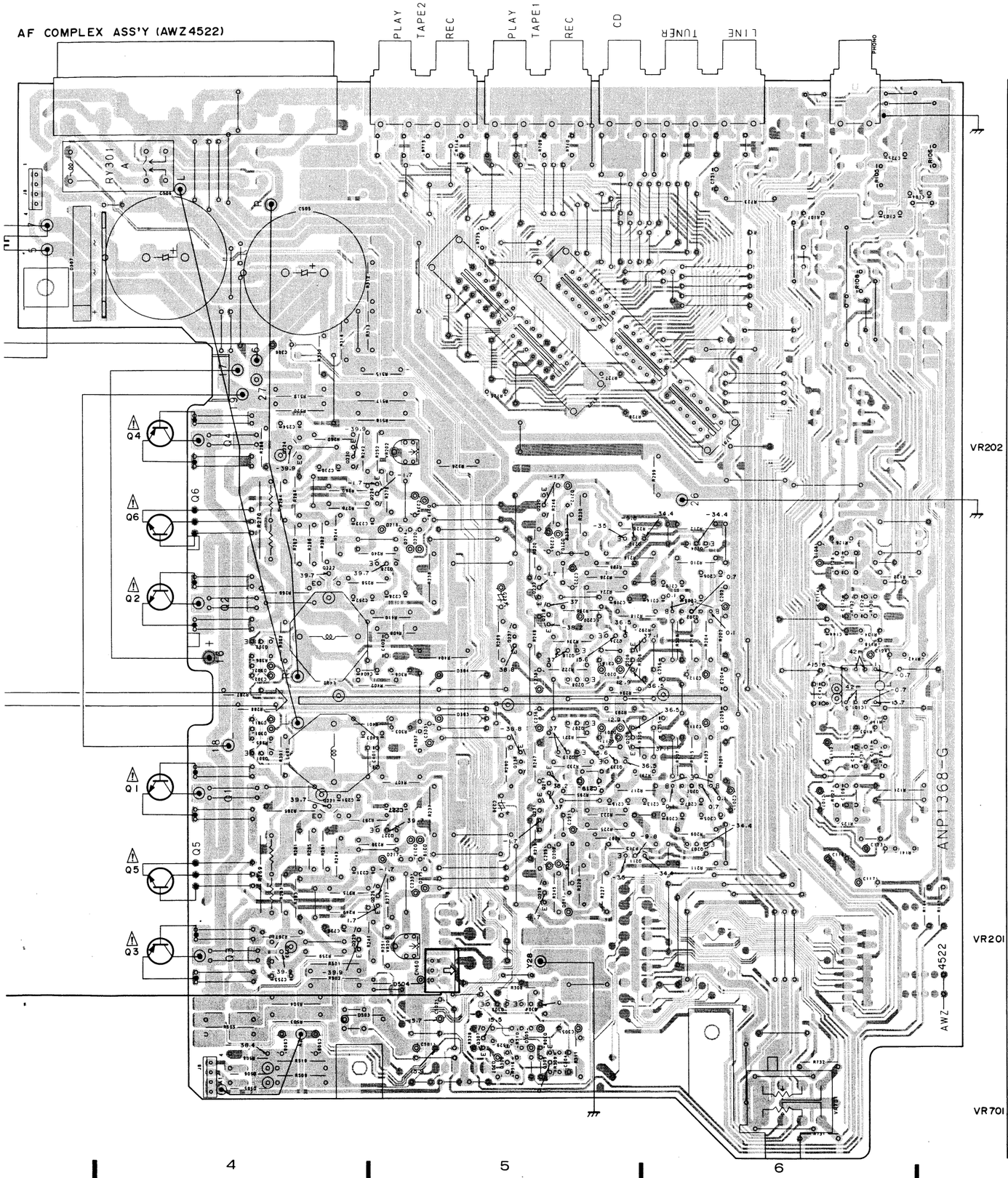








AF COMPLEX ASS'Y (AWZ4522)



VR202	Q224	Q230	
	Q226	Q220	
		Q212	
	Q228	Q204	
	Q222		
		Q232	
		Q202	
		Q218	
		Q237	
	Q302	Q234	
		Q216	
		Q206	
		Q208	IC101
		Q207	
		Q205	
	Q301	Q215	
		Q238	
		Q233	
		Q217	
	Q221	Q201	
	Q227	Q231	
		Q203	
		Q211	
	Q225	Q219	
VR201	Q229		
	Q223		
	Q303	Q304	
	Q307		
	Q306	Q305	
VR701			

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wirng symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 (E)	E or E	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ◎ (double circles) shows negative terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

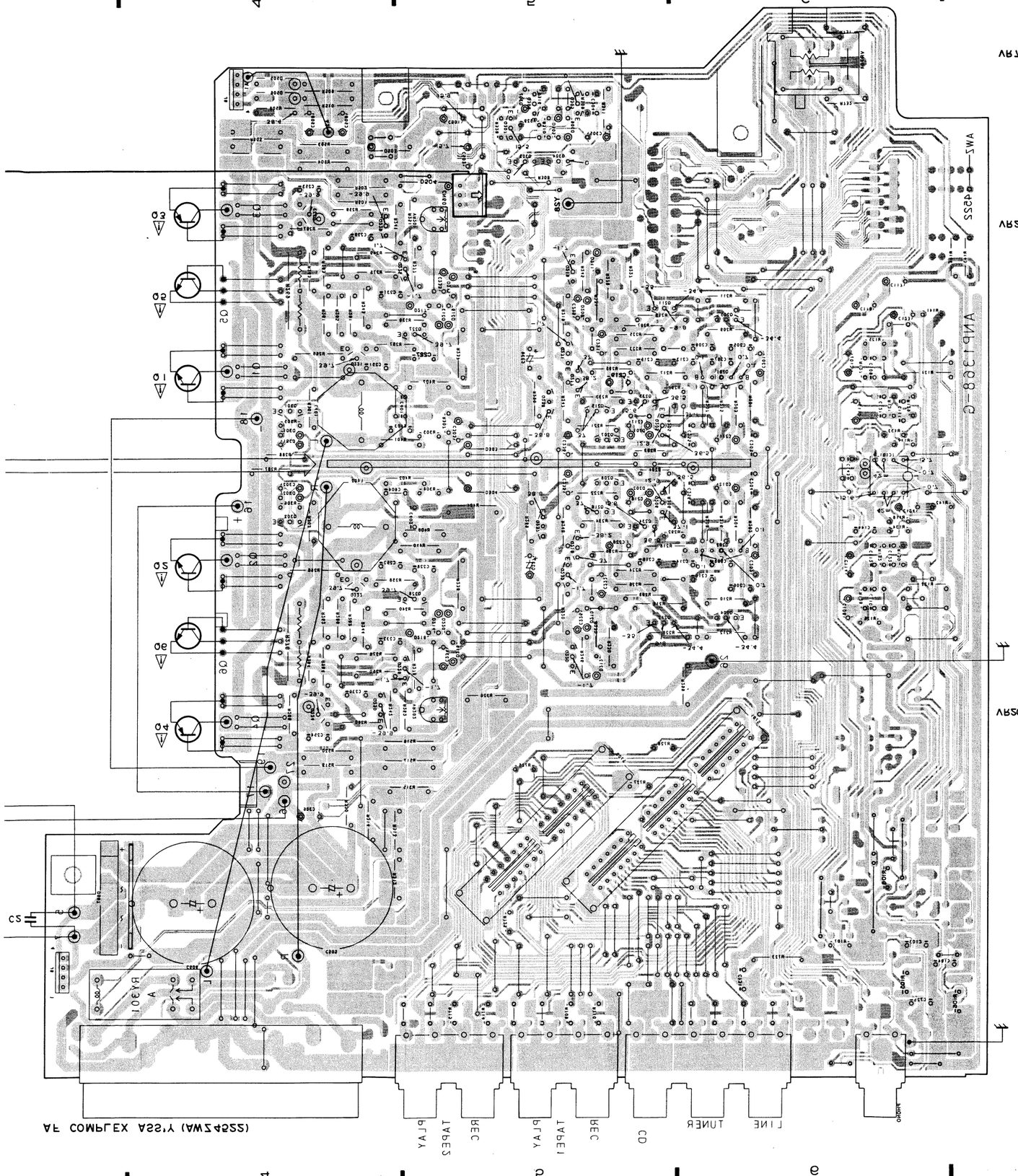
Line Voltage Selection

Line Voltage can be changed as follows :

1. Disconnect the AC power cord.
2. Remove the cover.
3. Change the connection of the power transformer primary taps.
4. Stick the line voltage label on the rear panel.

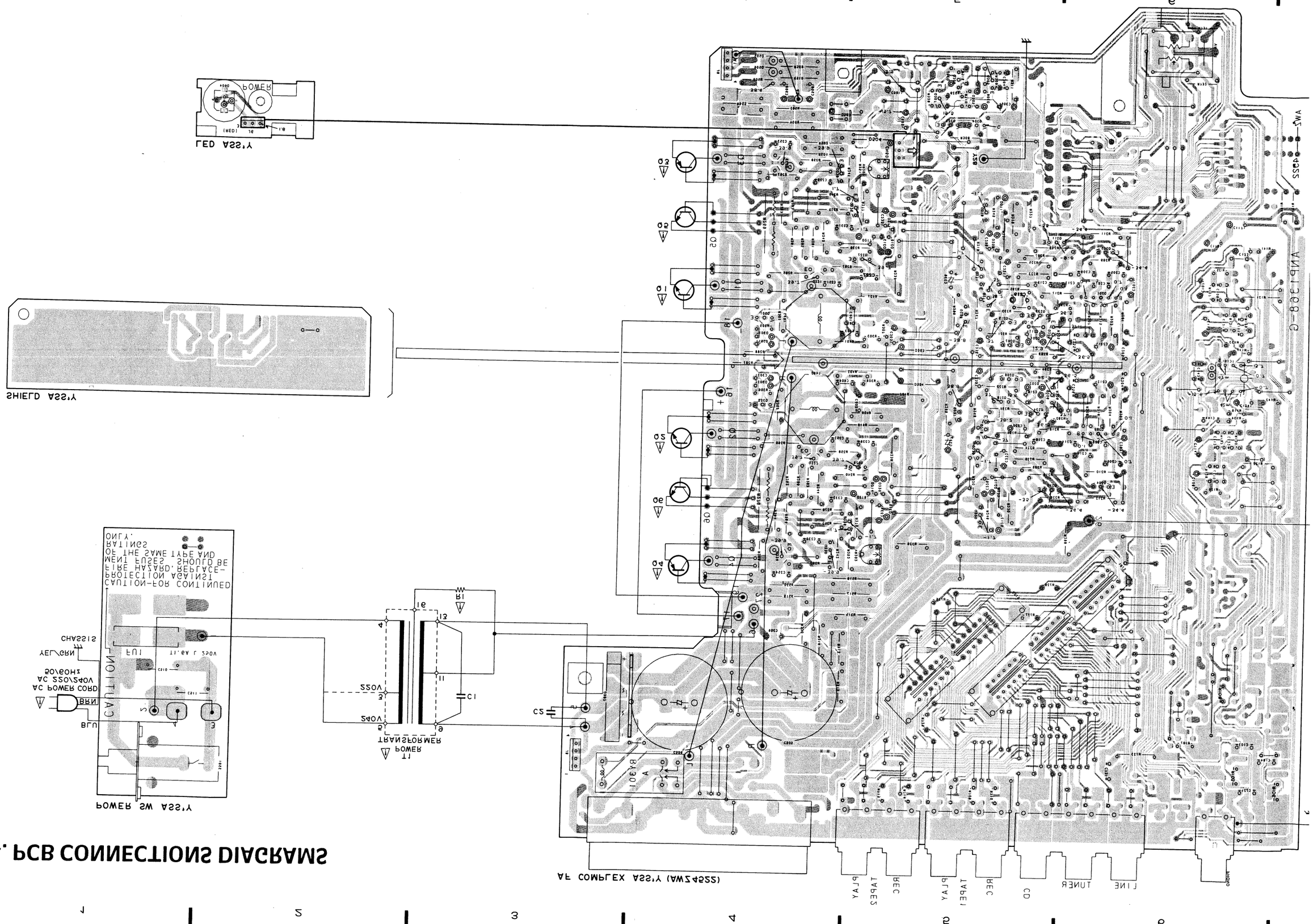
Part No.	Description
AAX-193	220 V label
AAX-192	240 V label

AT COMPLEX ASS'Y (AWZ2SS2)



This P.C.B. connection diagram is viewed from the foil side.

4. PCB CONNECTIONS DIAGRAMS



5. ADJUSTMENTS

ADJUSTMENT OF IDLE CURRENT

1. Connect wire as shown in Fig. 5 – 1.
2. After power ON, aging lasts for 5 mins with no-load.
3. In the Lch VR201 should be adjusted so that both terminal voltages of R269 may attain to 20 mV (±3 mV).
4. In the Rch VR202 should be adjusted so that both terminal voltages may attain to 20 mV (±3 mV).

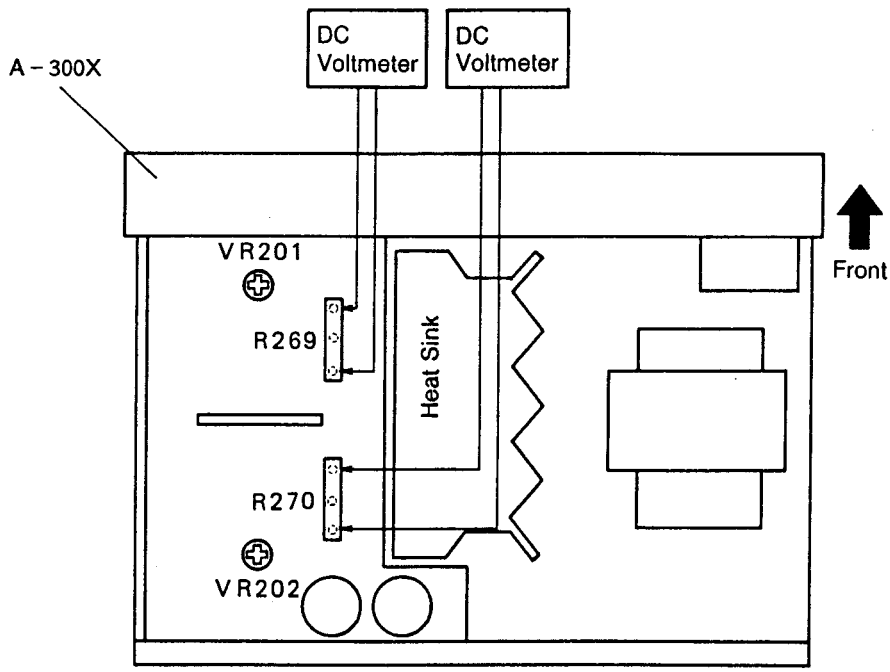
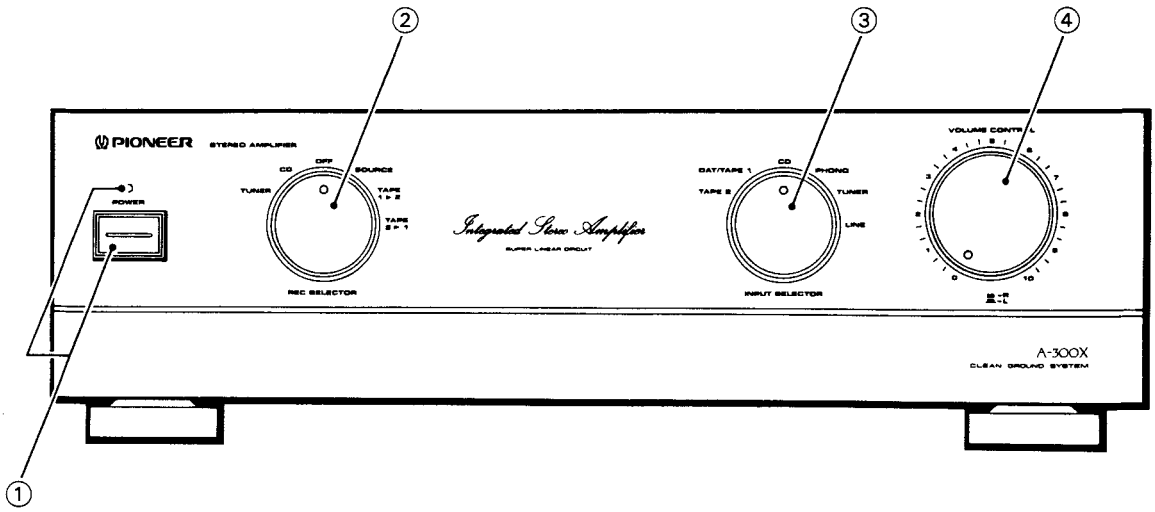


Fig. 5 – 1 Adjustment Drawing

6. PANEL FACILITIES



① POWER switch/indicator

Press to turn power to the unit on and off.
When the power is on, the indicator lights.

② REC SELECTOR switch

When this switch is set to a position other than SOURCE or OFF, the equipment selected by REC SELECTOR switch can be recorded from, irrespective of the settings of INPUT SELECTOR.

TUNER:
To record from the equipment connected to TUNER terminals.

CD:
To record from the equipment connected to CD terminals.

OFF:
In this position, nothing from the REC terminals of DAT/TAPE 1 and TAPE 2 is output. Set to this position when not recording; the cassette deck will be disconnected, improving sound quality.

SOURCE:
To record from the equipment selected by INPUT SELECTOR switch.

TAPE 1 ► 2:
To record (copy) from the cassette deck of DAT/TAPE 1 terminals, to the cassette deck of TAPE 2 terminals.

TAPE 2 ► 1:
To record (copy) from the cassette deck of TAPE 2 terminals, to the cassette deck of DAT/TAPE 1 terminals.

③ INPUT SELECTOR switch

Use to select the playback source.

LINE:
For playback with a component connected to LINE terminal.

TUNER:
For AM or FM broadcast reception with a tuner.

PHONO:
For record playback with a turntable.

CD:
For compact disc playback with a CD player.

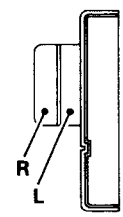
DAT/TAPE 1:
For playback with a cassette deck or digital audio cassette deck connected to DAT/TAPE 1 terminals.

TAPE 2:
For playback with a cassette deck connected to TAPE 2 terminals.

④ VOLUME CONTROL

Use to adjust the volume level.
This volume knob consists of two volume controls. Because you can adjust L (left) and R (right) channel volume levels independently, it also functions as a balance control.

[Example]
To raise R (right) channel volume level, prevent the L knob from turning with one hand, and turn the R knob with the other hand.



7. SPECIFICATIONS

Amplifier Section

Continuous power output (both channels driven at 20 Hz to 20 kHz)*
- T.H.D. 0.03 %, 8 Ω ..... 30 W + 30 W
- T.H.D. 0.05 %, 4 Ω ..... 40 W + 40 W

DIN Continuous power output (both channels driven at 1 kHz)
- T.H.D. 1.0 %, 8 Ω ..... 40 W + 40 W
- T.H.D. 1.0 %, 4 Ω ..... 60 W + 60 W

Dynamic power output (on EIA dynamic test signal)
- 8 Ω/4 Ω/2 Ω ..... 50 W/75 W/90 W

Total harmonic distortion*
- 20 Hz to 20 kHz, 30 W, 8 Ω ..... 0.03 %*
- 20 Hz to 20 kHz, 40 W, 4 Ω ..... 0.05 %*

Input sensitivity/impedance
- PHONO (MM) ..... 2.5 mV/50 kΩ
- CD, TUNER, LINE, TAPE ..... 150 mV/50 kΩ

PHONO overload level
- 1 kHz, T.H.D. 0.02 % (MM) ..... 150 mV

Output level/impedance
- TAPE REC ..... 150 mV/1 kΩ

Frequency response
- PHONO (MM) ..... 20 Hz to 20 kHz ±0.3 dB
- CD, TUNER, LINE, TAPE ..... 5 Hz to 100 kHz, $^{+0}_{-3}$ dB

Signal-to-Noise ratio (IHF short circuit, A network)
- PHONO (MM, 2.5 mV input) ..... 83 dB
- CD, TUNER, LINE, TAPE ..... 108 dB

Signal-to-Noise ratio (DIN, continuous power/50 mW)
- PHONO (MM) ..... 73 dB/63 dB
- CD, TUNER, LINE, TAPE ..... 88 dB/65 dB

Power Supply/Miscellaneous

Power requirements ..... a.c. 240 V~, 50/60 Hz
Power consumption ..... 410 W
Dimensions ..... 420 (W) x 352 (D) x 126 (H) mm
Weight (without package) ..... 6.8 kg

Accessories

Operating instructions 1

- *Specifications and design subject to possible modification without notice, due to improvements.*

* *Measured by Audio Spectrum Analyzer.*